deficient in fulness, no one can refuse a compliment to the skill with which the learner is led on step by step through the intricacies of reproduction and development.

The popularity of the work is likely to give Dr. Dalton the opportunity of preparing another edition, and we would suggest, in particular, that further details be given as to the physiology of muscle. A student who has a fair knowledge of the structure of muscular fibre, its chemical composition at rest and in action, its relations to the nervous system, and, in short, the history of its life, has a good grounding in the fundamental principles of physiology. Again, the accounts of the ultimate changes in the respiratory process, of the functions of the kidney, and of secretion are meagre, and give an amount of knowledge not likely to satisfy the requirements of various examining boards in this country. The histology of the tissues and organs might also, with advantage, be given more fully.

When a teacher writes a text-book it may be taken as an indication of his method of teaching the subject, but often the order in which subjects are discussed is changed from a desire to give a logical and systematic exposition. To deluge a beginner with a sea of facts relating to the chemical composition of the body is likely to confuse him and to make the subject distasteful, but whilst this is a caution to the teacher, it is quite justifiable for an expositor in print to begin with such wearisome details. With Dr. Dalton's method little fault can be found. He leads a beginner, by easy stages, through many difficult problems, whilst it is clear he has thought out the matter for himself and thus can clearly indicate how much may be taken as fact and how much may be accepted as theory.

Whilst Dalton's "Physiology" is not on a level with that of Dr. Michael Foster in being a representation of the most advanced opinions in physiological science, nor with Hermann's "Physiology" (translated by Prof. Gamgee), Beaunis' "Physiologie," Landois' "Lehrbuch der Physiologie des Menschen," or Carpenter's "Human Physiology," as a repertory of facts, it is a compendium well suited, on the whole, for a student of medicine. As a rule, successive editions of a popular work become larger, but in the present instance the author has been able to sift and refine so as to save space, without injuring the quality of his work. JOHN G. MCKENDRICK

OUR BOOK SHELF

Synthèse des Minéraux et des Roches. Par F. Fouqué et M. Lévy. (Paris: G. Masson.)

THE authors of this work have earned for themselves so high a reputation by their numerous and successful experiments in the synthesis of minerals and of rocks, that we may almost take for granted the thoroughness of the work now issued. Till the appearance of this volume the results obtained since 1872 (when a similar compilation was published by Fuchs) were to be sought in scattered memoirs; all results up to the present date are here collected into a single treatise, provided with an excellent set of indices. In an interesting but brief introduction (thirty pages) the advantages accruing to mineralogy and petrology from these syntheses are pointed out and the various methods of experiment explained. The next fifty pages are devoted to the experiments having for aim the synthesis of rocks, and the remainder of the volume (300 pages) to those which have resulted in the reproduction of minerals. In each instance careful references to the original memoirs and a distinct statement of the application of the results to geology are given. The book is very well printed on good paper, and has for frontispiece a coloured plate showing the appearance in polarised light of thin sections of artificial leucotephrite and basalt.

L. F.

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*

[*The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.*]

The Australian Aborigines

I OBSERVED in NATURE, vol. xxiii. p. 584, a critique from the pen of Mr. D. McLennan upon "Kamilaroi and Kurnai," the joint work of Mr. Fison and myself. On perusing it I wrote a reply to statements it contained, but owing to various causes I laid it for a time aside. Indeed I did not feel in any hurry to reply to criticisms which really did not touch my arguments. As, however, I observe that attacks are still being made elsewhere upon the conclusions at which Mr. Fison and I have arrived, and that substantially the same arguments are still being made use of which were used by Mr. McLennan, it has seemed to me that the time has arrived to meet these objections at any rate in a general manner. It is not possible in the space which I may hope that you will give me in your valuable pages, to enter upon details which would be absolutely necessary to render clear to my critics certain points which they have evidently misunderstood, perhaps from want of clearness on my part, possibly also from want of knowledge by themselves of the subject as it exists in the Australian field. I therefore now confine myself to some prominent points.

It is absolutely necessary, in order to perceive the structure of an Australian tribe with clearness, to distinguish between *clan* as a part of its local organisation, and *class* as a part of its social organisation. By this I do not mean "clan" in its ordinary acceptation, as, for instance, the "clan of the McPhersons," but a division of the local organisation which stands in relation to a division of the social organisation as *mutatis mutandis* did the Dime to the Phratria of Attica. These two organisations exist in all tribes with which I am acquainted, but in no two tribes in the same relative proportion. For the local organisation of the Kurnai tribe I have already used the word *clan;* for its social organisation I should use the word *class*. But the only two class-divisions of the Kurnai are the bird totems Yeerung and Djeetgun, which, as my critics take pleasure in pointing out, "divide the tribe into men and women." That there are, however, real totems in an abnormal form, is shown by their cinalogues occurring together with totem classes of the ordinary type in tribes of South Eastern Australia over an area extending more than 600 miles east and west. Some of these tribes have uterine, and others have agnatic descent.

In exogamous tribes having uterine descent there are no totem-clans; in tribes having agnatic descent there may be totem-clans where the *class* and the *clan* have become coterminous. The persistent use of this word "totem-clan," without regard to its application, shows in our critics a want of acquaintance with the nature of the Australian evidence.

It is not possible to argue correctly from the customs of one tribe to that of all Australian tribes, as our critics appear to do, for the customs of the tribes are very diverse. Tribes adjoining each other may be found to have each a distinctly different social organisation. It is a most misleading practice to criticise by arguing from the reported customs of one tribe to the customs of distant or of all Australian tribes. The further my inquiries extend, the clearer this comes out. The case of half-sister marriage among the Kamilaroi is an example. My inquiries have not as yet brought to light any other Kamilaroi tribe practising it than that one reported on by Mr. Lance. Yet my inquiries show that the Kamilaroi organisation in classes, sub-classes, and totem-classes extends far beyond the true Kamilaroi country northwards into Queensland, over an extent of country more than eight hundred miles north and south. The classes, sub-classes, and totem-classes can be even identified with

each other in dialectic forms. Not only do these totem-classes regulate marriage and descent, but the sub-classes, *i.e.* their well-known form as Ipai-Kumbo and Muri-Kubi, do so likewise, and moreover the two primary classes which I have now succeeded in tracing out over the area named are those in fact in considering the legality of marriages the aborigines finally look. It is, in fact, these two primary classes which, through their four subdivisions and the group of totem names, imperatively regulate marriage. They are the tw exogamous intermarrying groups into which the tribe in its social organisation is divided. The marriage of two individuals belonging to one primary class is regarded in the light of incest, and is very generally punished by death. Thus the objections which have been taken that the class-names do not influence marriage and are mere terms of address receive renewed and positive contradiction from accumulating evidence.

As to the objections taken to my statement of the practice of marriage by elopement among the Kurnai, I have little to add to the full account I have given in my work in that tribe. Mere denials of its existence, mere statements that marriage by elopement is a "product of misconception," do not alter the fact that the practice existed in Gippsland, as I have stated it. The difficulty which has been raised as to the elder men obtaining wives and second wives amounts to nothing. It may interest my critics to know as one instance that the man King Charley, whom I mentioned in "Kamilaroi and Kurnai," obtained his first wife from Maneroi by elopement; he obtained his second wife from the Wurnŭngatti division of the Kurnai also by elopement, leaving his first wife with some friends during this proceeding. In addition to these cases, in which elder men obtained wives, or second wives, in Gippsland by (1) capture; (2) inheritance from deceased brothers (own or tribal); (3) by the rare cases of gift by the woman's relatives or by exchange of a female relative, will be found by those who desire to find the evidence in "Kumilaroi and Kurnai."

It is an error on the part of our critics to suppose that in Australia it is general, or even very frequent for the elder men to monopolise all the women. The young men acquire wives in various manners in various tribes, as by arrangement by relations, by exchange of sisters, by betrothal, by elopement, or as among some of the Kamilaroi tribes, by an absolute right of selection by the "initiated youth" of any unmarried girl of the proper class-name, provided his hands are free of the blood of her kindred.

It has been asserted by more than one of our critics that "the class-names as well as the terms of relationship are names merely belonging to a system of personal addresses." Personal names are not in all Australian tribes secret names. In tribes within my knowledge personal names, class-names, totem-names, terms of relationship, are all used in addressing individuals. There is, therefore, no necessity in such tribes for individuals to have recourse to an invented system of fictitious relationships for the purpose of addressing each other, such as some of our critics believe in. The terms of relationship define groups, and the individual takes the name of his group. These groups have a real existence. For instance, in the tribe which occupied the table-land of Maneroo, it was the males of the two primary class divisions which met as two groups to mutually initiate their youths, that is, to confer upon them the privileges of manhood. It was the group "Jambi" of each intermarrying primary class-division which, under the control of the old men of the tribe initiated the youths of the other group. The youths being initiated are also "Jambi." It was one Jambi who gave a wife to the other Jambi, receiving his sister in exchange, and the relationship of Jambi included therefore "sister's husband" as well as "wife's brother"; but it was not imperative that the "sister" should be an "own sister," for she might be a "tribal sister." Jambi therefore represents a group; the individual takes the relationship of his group, and the relationship is a real one. We have here two exogamous groups of the social organisation of a tribe meeting to confer the rights of manhood on the youths of each, and each group providing the other group with wives. It is significant that in some tribes there is evidence that on such an occasion a temporary return to more or less intersexual communism between the groups takes place.

In conclusion, I may say that since the publication of "Kamilaroi and Kurnai," I have extended my inquiries over the greater part of Australia, and am still gathering information. The evidence has accumulated to a large extent, but I cannot at present foresee at what time it may be sufficiently completed for publication. I have therefore thought it well to make this statement, and also to say further that meanwhile I propose from time to time to summarise results in a series of short memoirs, the first of which I have presented to the Anthropological Institute, through the courtesy of Dr. Tylor. I must refer my critics to these memoirs, pending a final publication, for replies to their objections and for additional facts which it may be advantageous for them to consider. A. W. HOWITT

Sale, July 1

New and very Rare Fish from the Mediterranean

IN Prof. Giglioli's letter on rare Mediterranean fishes, which appeared in NATURE, vol. xxv. p. 535, he refers to specimens of *Scorpæna ustulata*, Lowe, obtained at Messina. In some "Notes on some rare and little known Fishes taken at Madeira," published between 1860 and 1870 in the *Annals and Magazine of Natural History*, I undertook to prove that the fishes on which Mr. Lowe founded that species were merely young specimens of the common *Scorpæna scrofa*, L. It might be well if Prof. Giglioli looked at the paper referred to before labelling his Sicilian fishes. With regard to the two Macruroid fishes, *Malacocephalus lævis* (Lowe), and *Coryphænoides serratus* (Lowe), which the Professor captured in the Mediterranean, I may state that they are so rare at Madeira, where they were originally detected by the late Mr. Lowe, that during thirty years I have only obtained a single specimen of the former and have never met with the latter at all. It would be curious if the "singular fish of a deep black colour, with small eyes, a naked skin, and a most abyssal physiognomy," should prove to be the rare Madeiran Gadoid, *Chiasmodon niger*, described by me in a paper read before the Zoological Society of London on November 10, 1863. The unique specimen was sent to the British Museum, but another example was afterwards taken in the West Indies, and figured by Dr. Carte in the *Proc. Z. S.* London, 1866, pl. ii. Singularly enough the stomach of the latter specimen contained a fish which exceeded the size of its swallower, and this was no other than an example of an extremely rare Madeiran species, *Neoscopelus macrolepidotus*, described by me in the *Proc. Z. S.*, January 13, 1863, pl. vii.

In enumerating the known species of precious corals in NATURE, vol. xxv. p. 552, Prof. Giglioli has not referred to the pure white species of Madeira on which Dr. J. E. Gray founded the genus *Hemi corallium*, the polyp cells being on one side of the branches, like the *Corallium secundum* of Dana. Only two specimens of this coral have fallen in my way, and one of these was presented to the British Museum. This was described with a figure by Dr. Gray in the *Proc. Z. S.* 1867, p. 394, Radiata, pl. xviii. See also his Catalogue of Lithophytes in the British Museum, 1870, p. 24. If this white coral could be found in greater abundance it would form a valuable article of commerce.

Madeira, August 26 JAMES YATE JOHNSON

Aurora

AN aurora of considerable proportions and of the radiant form was visible here on Wednesday night. At 9 p.m. the centre of energy was in the north-west, and from a large blunted cone-shaped smoke-like luminous mass in that quarter, fan-rayed streamers were projected to the zenith. The streamers were crossed at equal intervals by horizontal bars, similar in appearance, minus the motion, to the pulsating bars which sometimes form a feature of auroral activity. The day had been finer than has been the prevalent weather of late. Set of wind during the day, north-west. Drift of the clouds at high altitudes from south-west. The night calm, barometer high, thermometer 57. At 9 p.m. the western sky was covered with flocculent cirri. The north-west was obscured by the dense eruptive volume of auroral vapour. The northern sky was clear, and so was the eastern. The moon was shining brightly. The line between the auroral mass and the region of blue sky was remarkably sharp and well defined. Just after 10 p.m. a narrow streamer of great brilliancy shot from the north-west across the zenith to the north-western limb of the moon, constituting a notable feature of the display. As the night wore on, the centre of energy, together with the basal eruptive mass, travelled slowly northwards, and the northern sky became covered with bright white beams, rays, and streamers. At the same time, clouds of the cirrus type made a mackerel sky in the west, as well as in the zenith towards the south. Some of the streamers were of